Operating Manual

SUMMIT

Porcelain & Press Furnaces

Firmware V2012

Manufactured in the USA
by

Ibex Dental Technologies
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1-877-370-4242 **972-918-0393 fax** **www.ibexdental.com**

Cautionary Notes

For Porcelain Firing

The Ibex Summit and Summit Press muffle is constructed with a proprietary Radiance Ring precisely mounted from the top of the inside of the muffle. Therefore, its height is fixed relative to the firing brick.

DO NOT use a firing apparatus, i.e.: a honeycomb tray or similar devise that has **a width greater than 0.5in (13mm) or a diameter greater than 3in (76mm)**, as this is the width of the top of the firing brick. Failure to adhere to this height and width restriction can result in damage to the Radiance Ring and damage or loss to your work(s).

Firing trays should never hang over the edge of the firing brick, but should be centered on the brick and may safely be placed to the edge of the firing brick.

For Pressing

Do not use reusable plungers with the Ibex Summit Press.

Regardless of any information or advice pertaining to the use of reusable plungers in other furnaces, **reusable plungers are not to be used** in the Summit Press.
The Ibex Summit Press was specifically designed to press using **disposable plungers** for all pressable materials. While there is no physical danger to the furnace with using reusable plungers, the most common result will be an incomplete pressing where the material barely moves through into the sprue.

An Additional Note on Programming Vacuum

Many furnaces do not allow for the programming of a specific vacuum level but instead provide for a "YES / NO" or a percentage of vacuum entry, typically 90% to 100%. The Summit furnaces allow for a more precise vacuum control. A simple rule for entering programs that do not state a specific vacuum level in cm or inches is to enter 72 – 73 cm (28 inches). Higher vacuum levels of 74 - 75 cm (29inches) can be programmed in. However, most vacuum pumps will have difficulty achieving these levels.

IBEX Dental Technologies'
Summit Series Furnaces

Summit Porcelain and Summit Press User Manual

Your new Ibex SUMMIT furnace includes many state-of-the-art features that will provide you with unparalleled firing quality and ease of operation.

1. The revolutionary new "Long Life" open wire muffle with "Radiance Ring" patent pending provides unparalleled firing quality and consistency on all locations of the firing tray.

2. State of the art electronics and a high accuracy thermocouple make the Ibex SUMMIT a true "**NO** Temperature Calibration" furnace.

3. A tangentially placed High CFM cooling fan blows air across the muffle opening creating a Venturi effect to draw the heat out of the muffle, reducing cool down times by up to 50%.

4. ALL TOUCH Display screen. There are no buttons to press. Just use a light quarter-second touch to operate all functions of your Ibex SUMMIT.

5. The Ibex SUMMIT features a "Power Save" option that helps to extend the muffle life and decrease electricity usage while the oven is between firings.

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TOUCH SCREEN OPERATION

The touch screen of the Ibex SUMMIT is the control center of your furnace. All control functions and information to and from the user will be carried out through this screen. It is a high precision device that requires only a **Light Touch** of about a quarter of a second with the pad of your finger to select and activate the various controls and features of the Ibex SUMMIT.

NEVER use hard, sharp or pointy devices such as pens or pencils, as this could damage the touch screen membrane and will void the display warranty. Also note that excessive pressure such as hard angry pressing, finger nails, poking or any impact with a hard device will result in touch screen membrane damage and may also crack the glass cover plate behind the membrane. This kind of damage is not covered under warranty.

If you are having difficulty with the display recognizing your touch entries or wrong entries are occurring, especially when touching near the lower edge of the display, the touch screen may require recalibrating. Follow the Display calibration instructions found in the Utilities menu under Calibration.

A scratch resistant polymer panel covers the display. The panel can be cleaned periodically with a clean damp cloth or paper towel by wiping in a straight motion across the panel with a light pressure. The fine powders that accumulate in the dental lab environment can cause scratching if a dry cloth or paper towel is used.

REMEMBER!

A light touch of about a quarter of a second in duration is all that is required for touch screen entry. Quick or rapid touches will be mostly ignored to prevent any accidental touches from being entered. Hard pushes or use of hard pointy objects such as finger nails or pen tips will damage or reduce the life of the touch pad and are not covered under warranty.

The following pages will describe how to program and utilize the features of your Ibex SUMMIT Porcelain Furnace.

Oven Set-up and Connections

After removing all items from the shipping box, you should have the following:

One Ibex SUMMIT Porcelain or Press Furnace, and

A1- One Ibex SUMMIT door brick (porcelain and pressing)
A2- One door brick with ceramic press plate (pressing furnace only)
B- One Ibex SUMMIT memory stick, (located inside the door brick box)
C- One Ibex SUMMIT heat tray, black anodized
D- One AC power cord
E- One vacuum pump power cord adaptor
F- One airline (pressing furnace only)

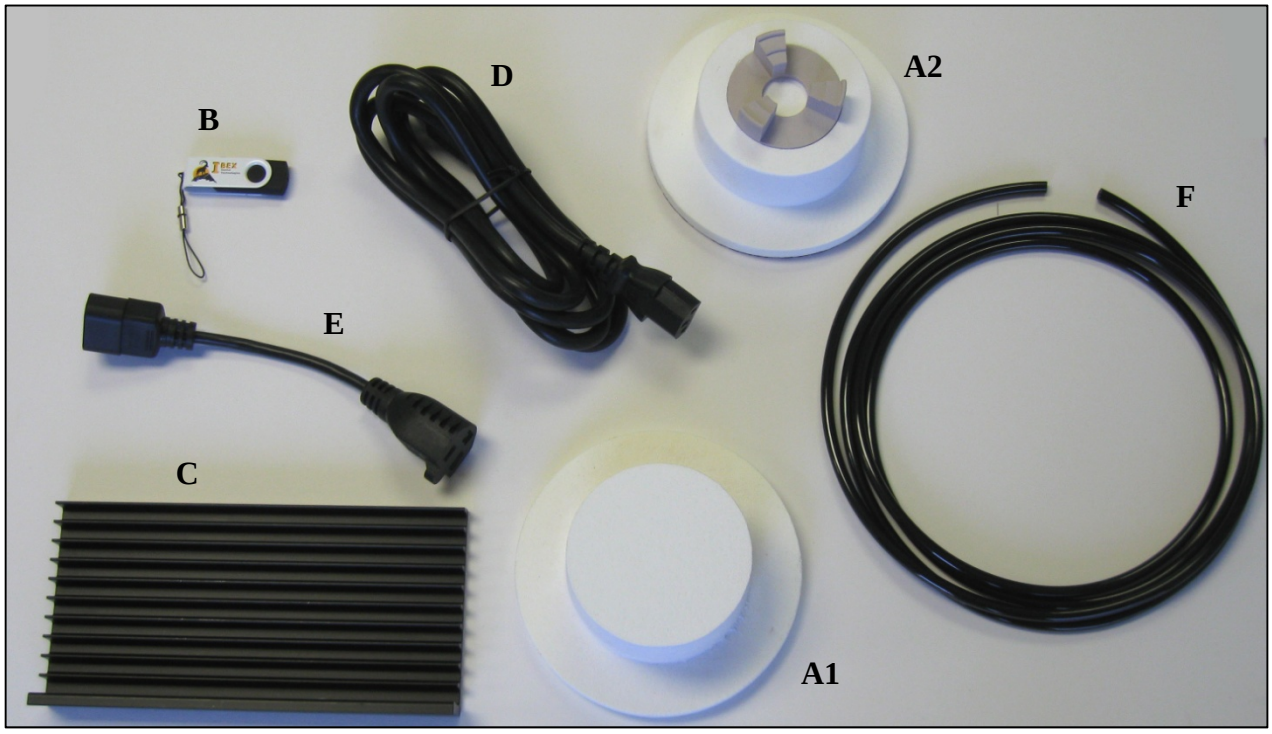

Photo #1

Setup and Connecting the Ibex SUMMIT

Setup of the Summit is very simple and similar to other furnaces. Place the Summit or Summit Press on a flat, level work surface. The footprint or area required by the Summit is 11″ on each side. The height of the Summit is 21″ while the Summit Press is 25 ½″ tall. Each requires at least 4″ of clearance to allow for proper ventilation of the heat from the muffle chamber.

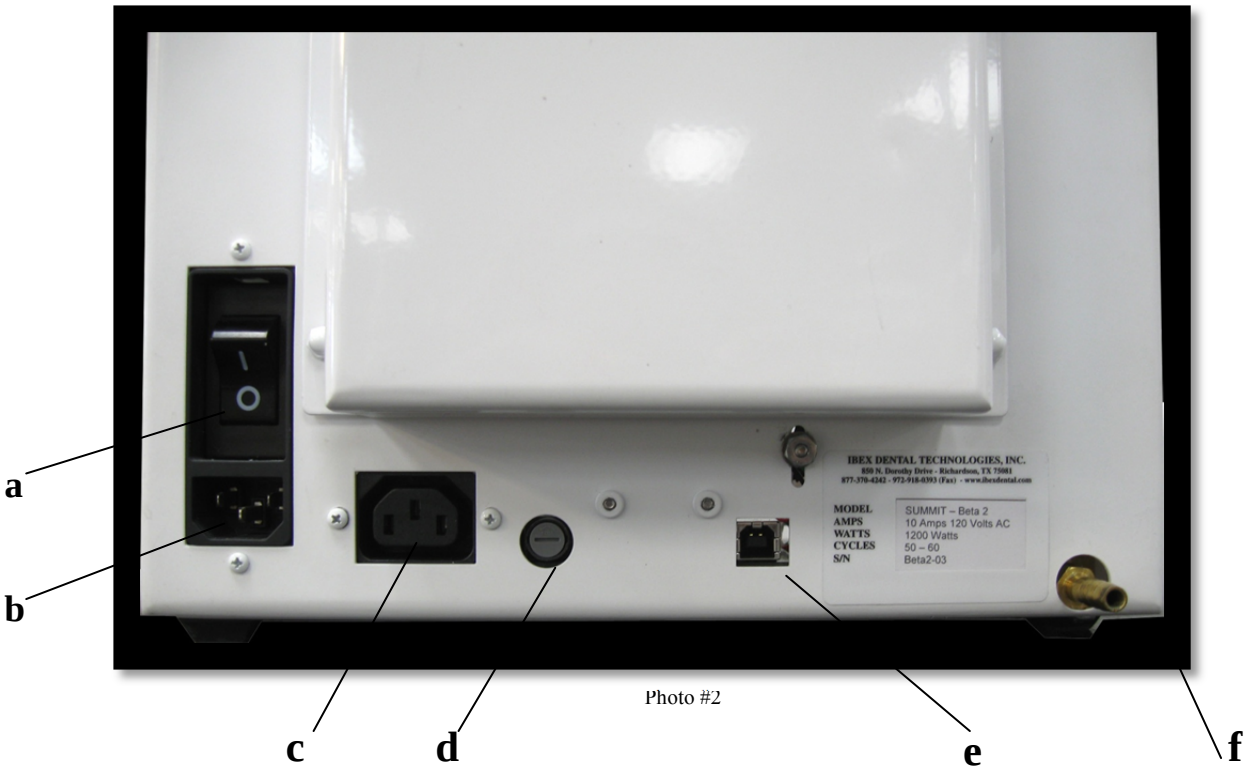

Photo #2

a) On/Off switch – 20 Amp Circuit Breaker

b) Main power receptacle

c) Vacuum pump receptacle

d) Vacuum pump fuse (7 amps, slow blow)

e) Computer USB peripheral port (future use)

f) Hose connector for vacuum pump

After situating your Ibex SUMMIT on your work surface, take the 7 ft. AC power cord, and plug the appropriate plug end into the Ibex SUMMIT Power Receptacle (b). The receptacle is located on the lower left corner, as viewed from the back of the furnace, just below the ON / OFF switch. The other end of the power cord is inserted into a standard AC power socket.

NOTE! *It is recommended, for safety reasons, that you do not situate your Ibex SUMMIT near any materials that can catch fire. Although the surface temperature of the case stays relatively cool, even during multiple operations, the muffle area operates at high temperatures when idle and the platform is lowered. This can create a potential fire hazard and is to be avoided.*

Connecting the vacuum pump

Some vacuum pumps are supplied with a connector matching the vacuum pump receptacle (c) located on the rear panel. If your pump has a standard 120Vac plug, use the vacuum pump power cord adaptor (E) supplied. Insert the plug from the vacuum pump into the adaptor. Then plug the adaptor, with vacuum pump power cord attached, into the female vacuum power receptacle. This receptacle is located just to the right of the main power receptacle. Connect the vacuum hose to the barbed hose connector located at the lower right corner of the back of the furnace.

NOTE! *It is recommended that the vacuum pump be plugged directly into an AC receptacle and run for 30 seconds before connecting to your furnace. This loosens the manufacturing grease.*

Connecting the Air Pressure (Pressing Furnace only)

Insert one end of the ¼″ tubing (F) into the swivel fitting mounted to the air regulator. Connect the other end of the tubing to your air supply. It is recommended that there be an isolation valve installed in your air line system so that the pressing line can be connected and disconnected as needed without having to shut down the entire line or system. It is further recommended that the main pressure line have a regulator on it as well to minimize output pressure fluctuations on down line pressure regulators like the one for the IBEX Summit Press.

NOTE! The regulator is preset to 60 - 65psi.

Powering up the Ibex SUMMIT

Now that your Ibex SUMMIT Furnace has been properly situated and all the required connections have been made, it is ready to be turned on.

NOTE! *Be sure to remove the platform lift block prior to powering the furnace on, as the platform motor will try to move the platform down as part of the power up tests.*

Turn on the main power switch located just above the main power cord in the rear of the oven. The default Power Save, (idle), Temperature is 450° C.

NOTE! *It is important to allow the oven to come up to a high temperature (700 - 900°C*) and remain there for at least an hour. Have the platform be open at least one inch. This will ensure that most of the moisture that has absorbed into the muffle material will vaporize out of the muffle chamber. This is an important step prior to running any program with vacuum. Water coming out of the muffle material under vacuum in the form of water vapor will cause poor vacuum performance and could generate vacuum failure errors. In addition, the water vapor, as it is drawn through the vacuum line and into the vacuum pump, will condense back into water and collect in the vacuum pump. This can greatly reduce the life of the vacuum pump and could void the warranty.*

**See Power Save settings in the Utilities section for instructions to change Power Save Temp.*

Photo #3

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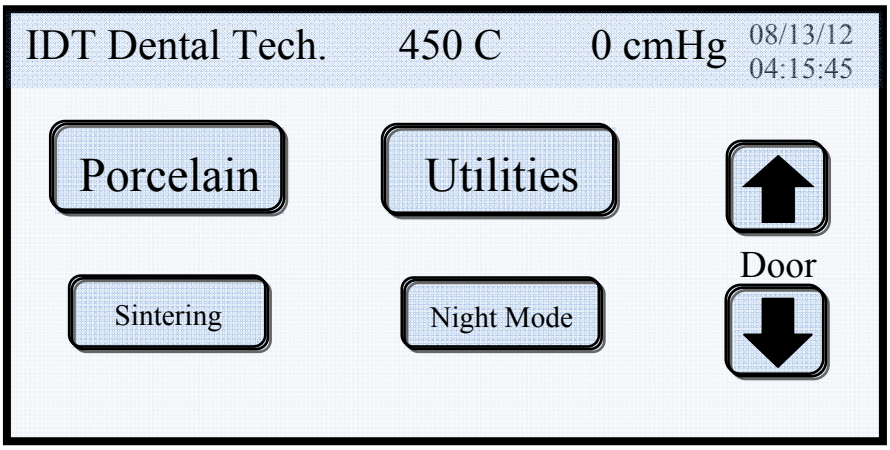
The Main Screen



Display Example #1

After powering up your Ibex SUMMIT for the first time, the Main Screen, as shown in Display Example #1 above, should be showing. If some other screen is displaying instead, touch the Cancel or OK button. This will bring you to the previous screen. Keep touching Cancel or OK until the above screen appears.

If there is no screen showing but the display is a light blue color, shut the power off, wait about 10 seconds and turn the power back on. If no screen persists after two attempts, call Ibex Dental Technologies service for assistance at 1-877-370-4242

The main screen offers four menu buttons plus door control.

1. Porcelain – Touching this button will bring you to the Select Program screen where you can perform all the required program functions, such as creating, editing and running programs.

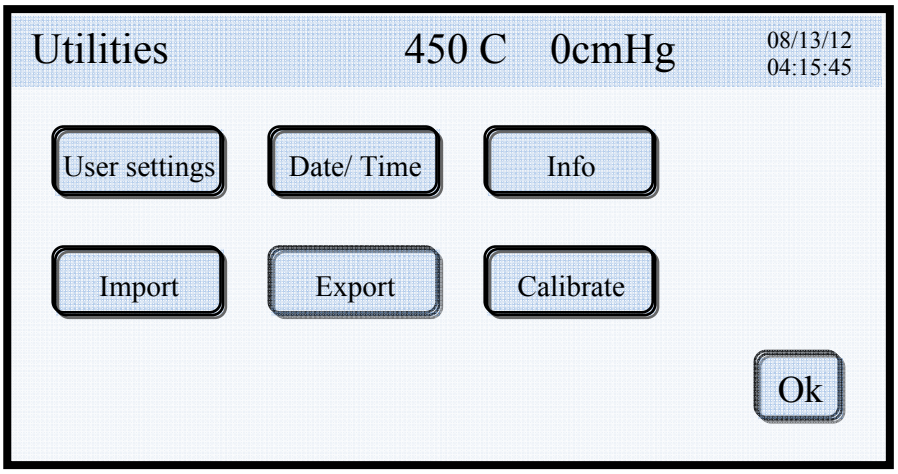
2. Utilities – Touching this button brings you to the main utilities screen. Here you can set the user parameters to customize the furnace's operation to your requirements.

3. Sintering – "METAL SINTERING ONLY" - This button will bring you to a quick, easy to use metal sintering program. NOTE! This is not for zirconia sintering.

4. Night Mode – Touch this button to go into Night Mode immediately. This overrides the time setting in the Night Mode and Features utilities.

NOTE! *Proceed to the* Utilities Menu *screen to program furnace settings prior to creating and firing any programs.*

Utilities Menu



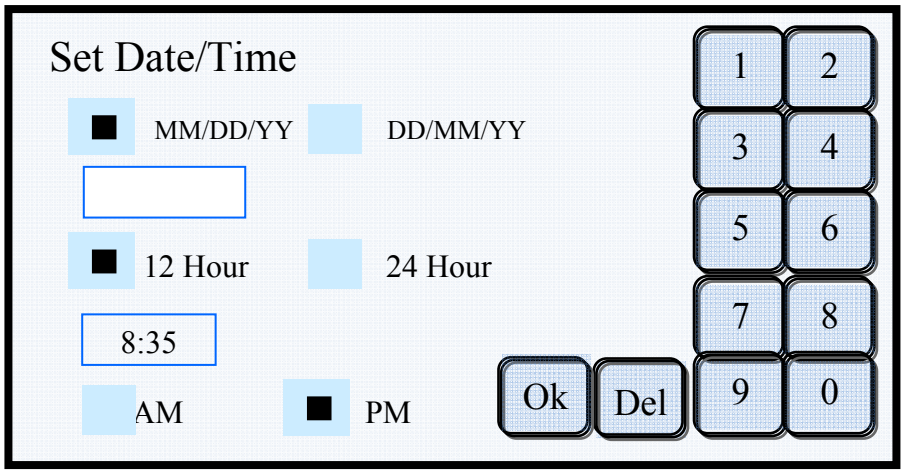
Display Example #2

The Utilities Menu is where the Ibex SUMMIT Porcelain Furnace can be customized to meet your particular needs. The Utilities Screen offers six menu picks as shown above in Display Example #2.

1. **User Settings** – Input user settings and operational parameters
2. **Time and Date** – Select 12/24 clock, input time and date
3. **Information** – Review software version and usage counters
4. **Import** – Import programs from the memory stick to the furnace memory
5. **Export** – Save programs from furnace memory to the memory stick
6. **Calibration** – Calibrate touch screen, door lift time and vacuum level

NOTE! *The Time and Date information was entered at the time of manufacture for testing purposes. The date should be accurate, but you may need to enter the correct time. You can change the date and time format.*

Date and Time



Display Example #3

The Time and Date screen is where the time and date for the real time clock will be entered. The user can select the date format, a 12 hour or 24 hour time format and AM or PM by touching the appropriate light blue squares. The center of the square will blacken to acknowledge your selection.

The blue lined box under the MM/DD/YY is for entering the date. Touch this box to enter the date. The box will clear and is ready for the date to be entered. To enter August 15, 2012, in the US format enter the date in a string of numbers using the *mmddyy* format: 081512. Use leading zeros for months and days that are less than ten. If the International format has been selected, enter the number string using the *ddmmyy* format: 150812. If the date format is changed at a later time, the date display will automatically update and there is no need to reenter the date information. While entering the date or time if a miss touch is made, press the **Del** button to delete the previous touch entry.

NOTE! To correct or change a completed entry, just retouch the appropriate box. This clears the box and the correct data can be entered. All entries on any screen can be corrected in this manner.

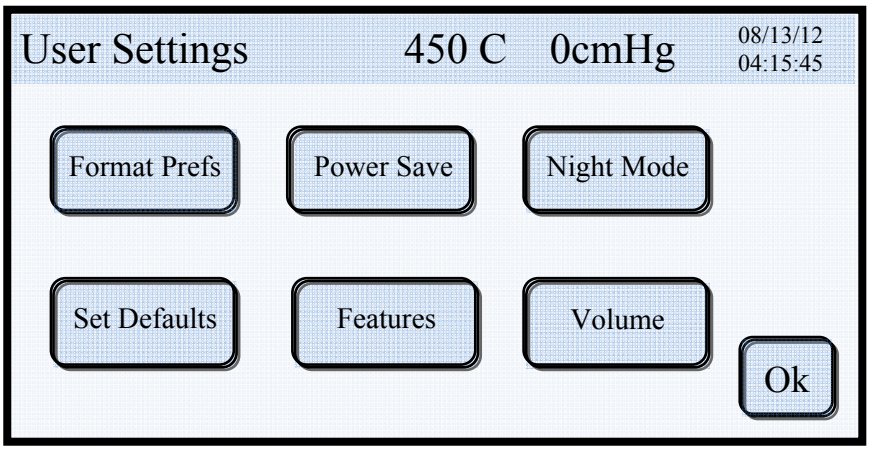
The two light blue squares below the date are for selecting the 12/ 24 hour format. After selecting the appropriate time format, touch the blue lined time box to enter the time in the same manner used for entering the date. To enter the time 8:35 p.m., touch 0835. When completed, touch the appropriate box for AM or PM. If the 24 hour format has been selected enter the string 2035. The AM and PM boxes will be grayed out and inoperative. When completed, touch the OK button. All data is now saved to memory and the display has returned to the Utilities screen. The date and time will reflect your changes.

The SUMMIT's real time clock battery will maintain proper time for up to five years.

All operational memory such as the user programs and utilities settings are stored in a non-volatile memory and will not be affected should the battery fail. The loss of date and time information when the furnace has been turned off or suffered a loss of power indicates a low battery failure. Replacement is necessary.

User Settings

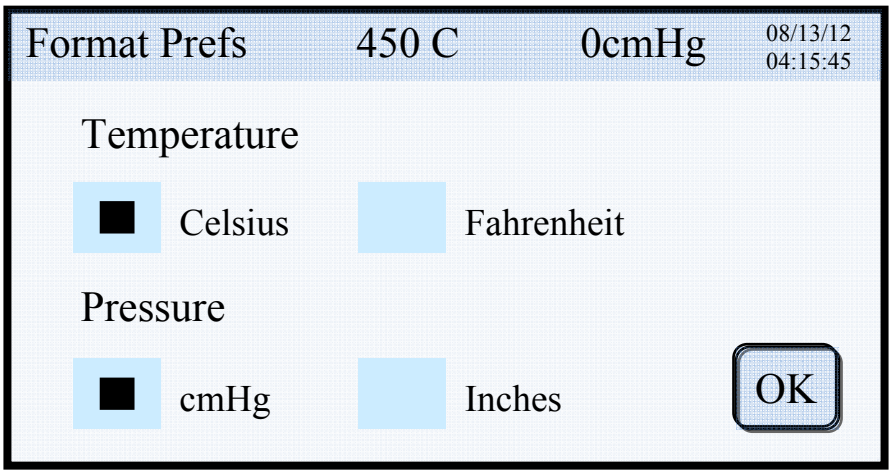
Touch the User Settings button to proceed with entering the options settings



Display Example #4

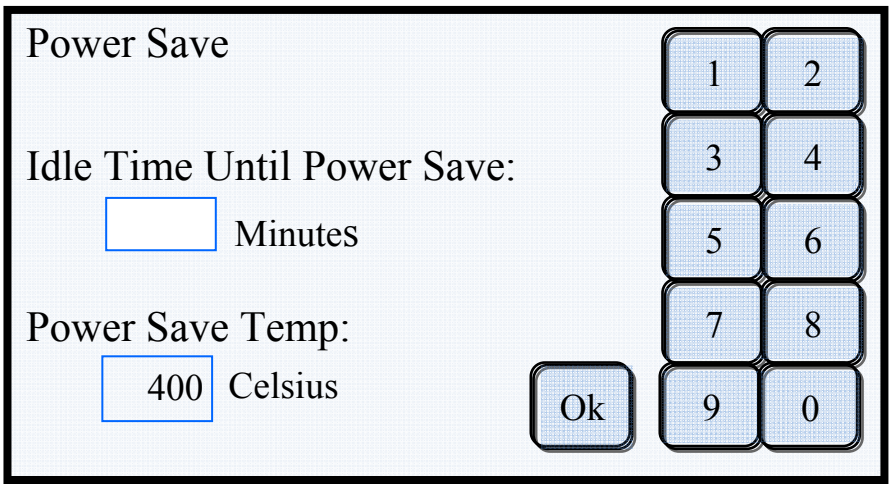
The User Settings Menu is where the user customizes the furnace operation. The menu picks are as follows:

1. **Format** – Here you select the temperature display in °C or °F and the vacuum in cm or inches. Any combination is permissible. When finished, touch the OK button to return to the User Settings Menu.



Display Example #5

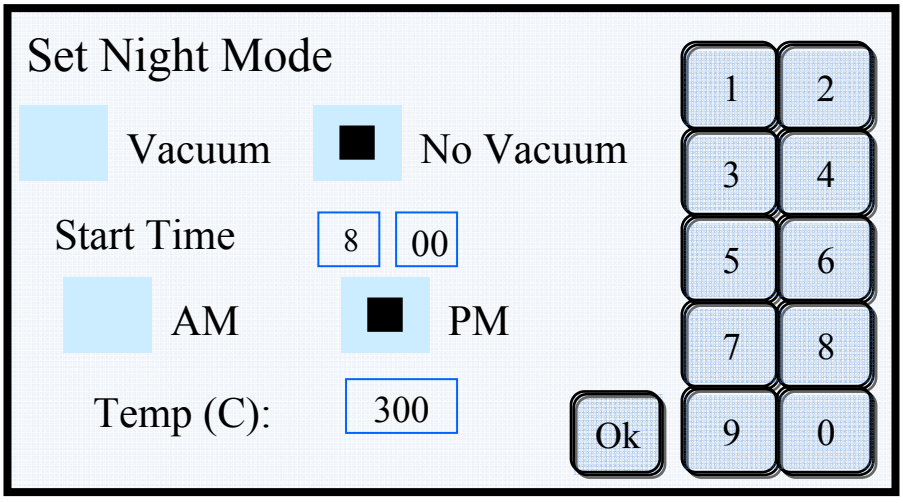
2. **Power Save** – This feature will raise the platform and maintain the programmed temperature after a specified amount of time. The factory settings are 400° C and 90 minutes for the porcelain furnace and 700° C and 5 minutes for the Pressing Furnace. Touch the "Idle Time Until Power Save" box to enter how many minutes need to elapse from either the power up of the furnace or the completion of the last firing cycle before going into the Power Save mode and then touch the "Power Save Temp" box to enter a new temperature to maintain while in the Power Save mode. It is recommended that you enter a temperature at or near your most common Low Temp setting that will be used. When completed, touch the OK button to return to the User Settings Menu.



Display Example #6

3. **Night Mode** – Night Mode places the furnace into a sleep state at a particular time of day, every day. Touch the appropriate button if you want or do not want vacuum pulled when going into Night Mode. Start Time is the time of day that the furnace will go into Night Mode. Be sure that the time format entered is consistent with the time format selected in Time / Date, 12 / 24 hour clock. The left most box is hours, *hh*, and the right box is minutes, *mm*. As in all data entries, leading zeros are not required. Touch the appropriate box for AM or PM if using the 12 hour clock. Touch the temperature box to enter the desired Night Mode temperature. Touch the OK button when all data has been entered.

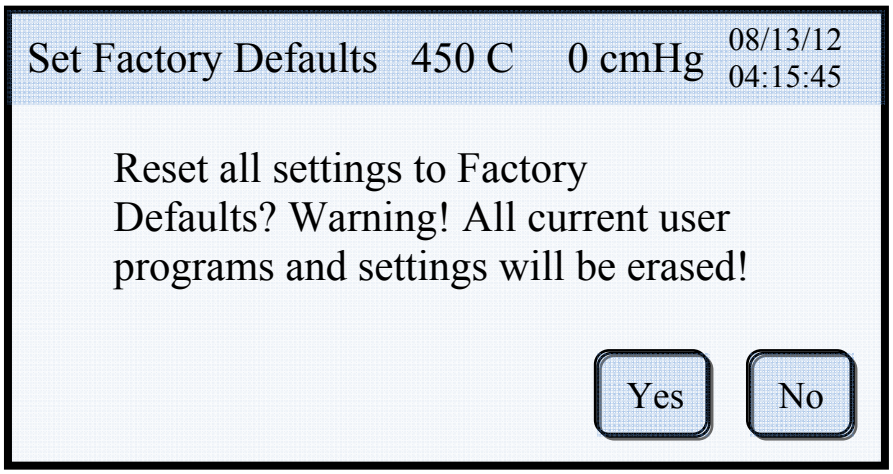
NOTE! *The Main Screen* Night Mode *button is immediate and overrides the time settings!*



Display Example #7

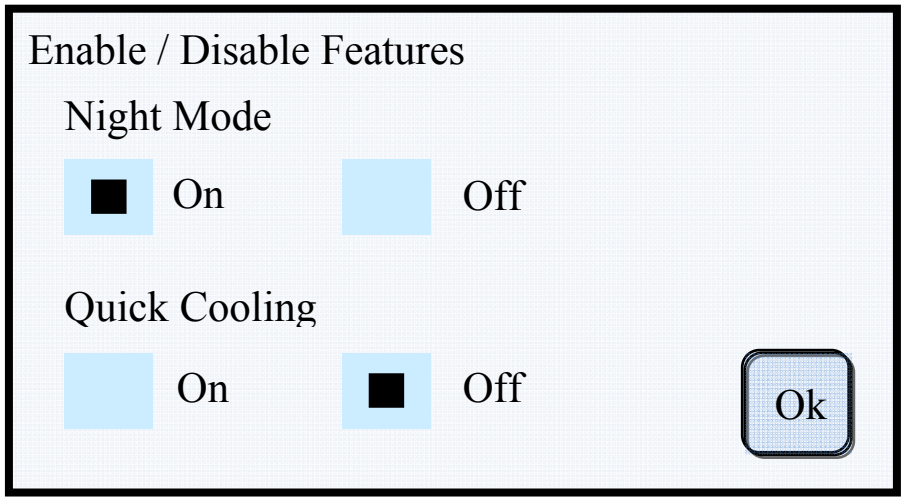
4. **Set Factory Defaults –** This button will reset all user settings to the factory defaults and erase all porcelain and pressing programs. You will be prompted to verify that this is the action you wish to take.

   NOTE! This action should be taken only when experiencing erratic or irregular system operation. It is strongly recommended that you contact Ibex Dental Technologies with a detailed description of the symptoms prior to taking this action.


Set Factory Defaults 450 C 0 cmHg
08/13/12
04:15:45
Reset all settings to Factory Defaults? Warning! All current user programs and settings will be erased!
Yes
No

Display Example #8

5. **Features** – This screen allows you to enable or disable the Night Mode and Cooling Fan features of the furnace. The enable or disable aspect is global in nature, meaning that regardless of any other parameters or settings, these features will be enabled or disabled.

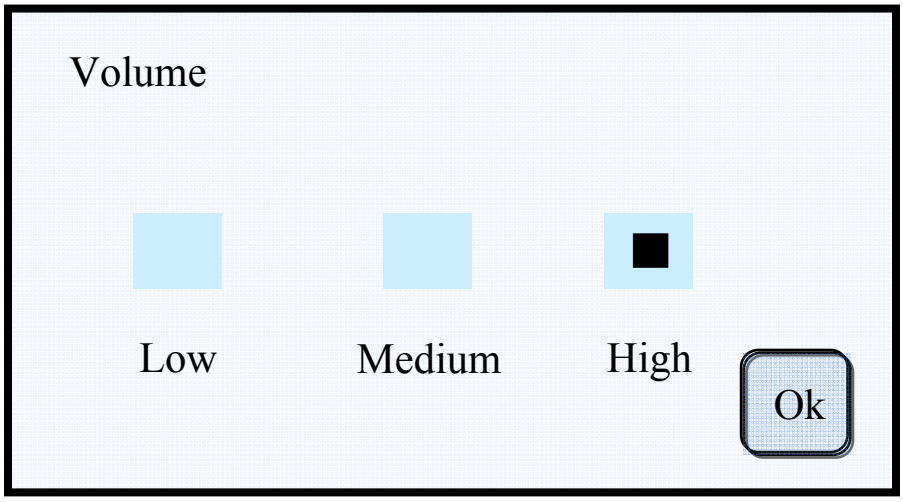


Display Example #9

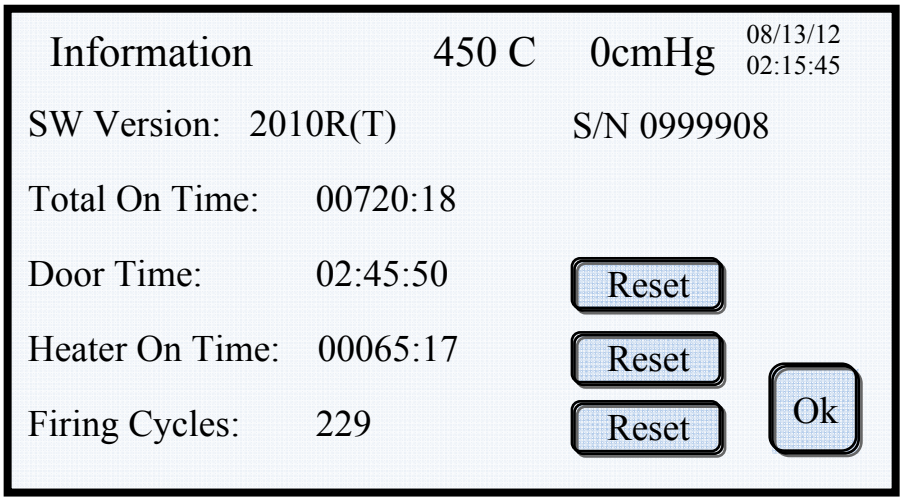
NOTE! The Night Mode button on the Main Screen overrides this setting and places the furnace into Night Mode immediately.

NOTE! When running a pressing program in the Summit Press, the Quick Cooling Fan is always disabled.

6. **Volume –** This button brings up the Volume select screen. There are three volume level choices, Low, Medium and High. The default setting is High. To change the volume level, touch either of the buttons not selected. A beep at the associated volume level will be heard allowing you to choose which volume setting works for you.



Info



Display Example #10

The INFO screen displays the current software version that the SUMMIT is running. Additionally, the INFO screen provides the total number of hours that the furnace has been powered on, the number of hours and minutes that the door lift motor has been run and the total number of hours and minutes of power applied to the muffle. The last counter displays the number of firings the furnace has run. The ability to reset the last 3 counters is password protected by a 6 character code and is reserved for factory use only.

Import

The import function is a powerful tool that allows an owner, manager, or user to quickly import programs that have been previously exported. One can choose to globally clear all existing programs stored in the furnace memory prior to importing from the memory stick or just import the programs stored on the memory stick. When you press the IMPORT button you will be asked to erase all programs stored in the furnace before importing programs or import the memory stick programs.

For example:
One of your Ibex furnaces has the following programs stored: 1, 2, 3, 5, 6, 10 and 12. The memory stick has the following programs stored: 1, 2, 3, 4, 6, 7, 8 and 11.

If you were to select the global erase option, all the original programs will be deleted from the furnace memory first, and then the memory stick programs will be copied over.

Programs 1, 2, 3, 4, 6, 7, 8 and 11 have now been copied to the furnace memory. Programs 5, 10 and 12 have been permanently erased.

If you choose the regular import option, then programs 5, 10 and 12 will **not** be deleted. The furnace's list of programs will now look like this: 1, 2, 3, 4, 5, 6, 7, 8, 10, 11 and 12.

NOTE! *The parameters for the program numbers that were on both the memory stick and the furnace have been overwritten to the values stored on the memory stick.*

When an additional Ibex Summit furnace is being placed into service, **you can quickly import all the original programs from the first furnace to the new furnace**. It also allows an owner or manager to quickly restore programs to their original settings should they be altered by technicians.

It is strongly recommended that the 32MB USB memory stick supplied with the Ibex SUMMIT be used. Not all USB memory sticks are compatible with the Ibex SUMMIT as many larger capacity memory sticks, (4GB or greater), have special formatting or programs that interfere with the SUMMIT's ability to read the memory. The memory stick supplied with your SUMMIT furnace has been designed to work correctly with your furnace and has ample memory capacity for all 80 programs and system file upgrades.

If the memory stick has been inserted when the Import button was touched, then the display will show the number of programs found on the stick. You will be prompted to continue to import or cancel to return to the previous screen. If the memory stick has not been inserted, you will receive the message "No Media Present". Just insert the memory stick and the program count will be displayed. You can proceed to import or cancel.

Export

The export function is a simple procedure. Simply insert the memory stick into the USB port and touch the EXPORT button. You will be prompted to either proceed with exporting or cancel the procedure.

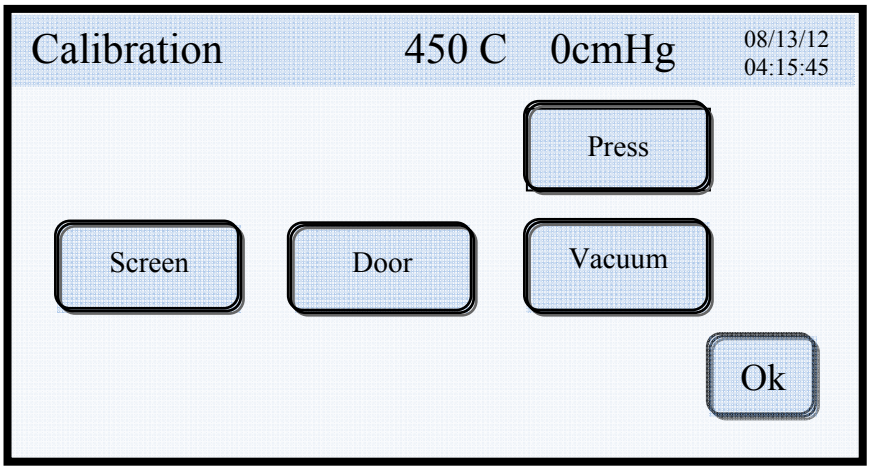
If you touch the EXPORT button prior to inserting the memory stick, you will receive the following message: “No Media Present”. After inserting the memory stick you will be prompted to either proceed with exporting or cancel the procedure.

Remember to keep your memory stick in a safe location. All memory sticks come with a nylon loop so that it can be hung over a hook or nail.

It is strongly recommended that the memory stick be stored on one of the back cover retaining nuts. As the furnace is rarely moved, the memory stick should be easily accessible when required.

Calibration

There is no requirement or ability to calibrate the temperature of your SUMMIT furnace. If you feel that your furnace is not firing at the proper temperature or if you have any other operating questions please call tech support at 877-370-4242 or email us at techsupport@ibexdental.com.



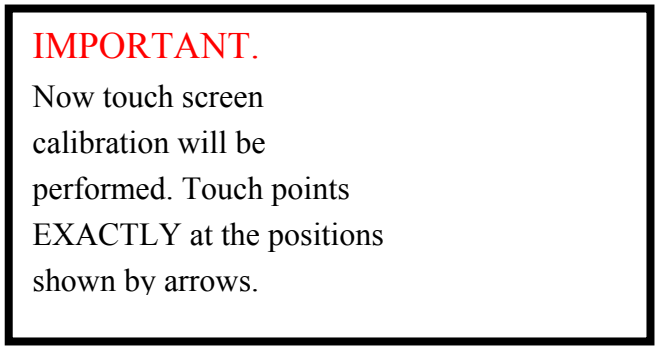
Display Example #11

The calibration button is provided to calibrate the following furnace functions:

1. Touch Screen Calibration
2. Door Calibration
3. Vacuum Calibration
4. Pressing Plunger Calibration (Pressing Furnace only)

Touch Screen Calibration

The touch screen will require occasional recalibrating. This is a very quick and simple procedure. If you are noticing difficulty in the touch screen responding when touched, **do not** press harder or use a hard or pointed object to get the screen to respond.



Display Example #12

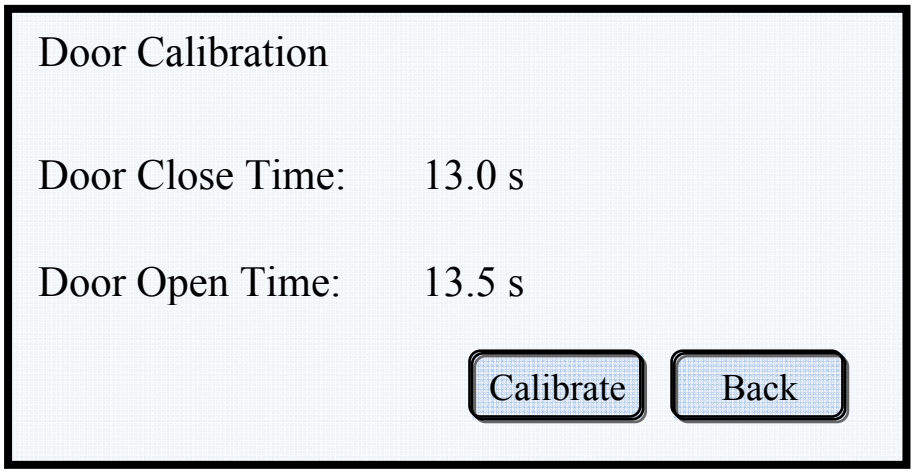
Display Example #13

Display Example #14

Display Example #15

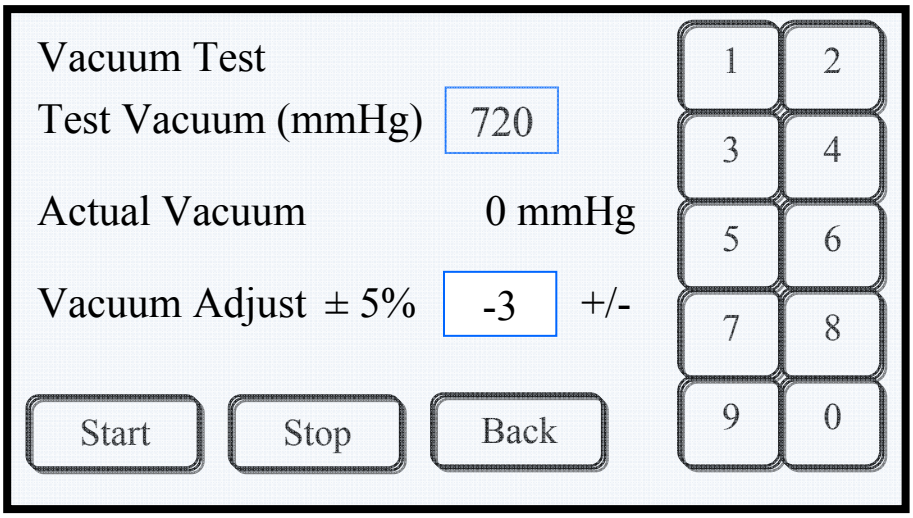
Door Lift Calibration

The Door Lift Calibration is used to determine the travel time for the lift motor to raise and lower the platform. The calibration values are used to provide more accurate preheat and cooling times. Touch the "**Calibrate**" button and the lift will raise and lower. The travel times will be displayed and recorded in memory. Touch the "**Back**" button to return to the calibration screen.



Display Example #16

Vacuum Calibration



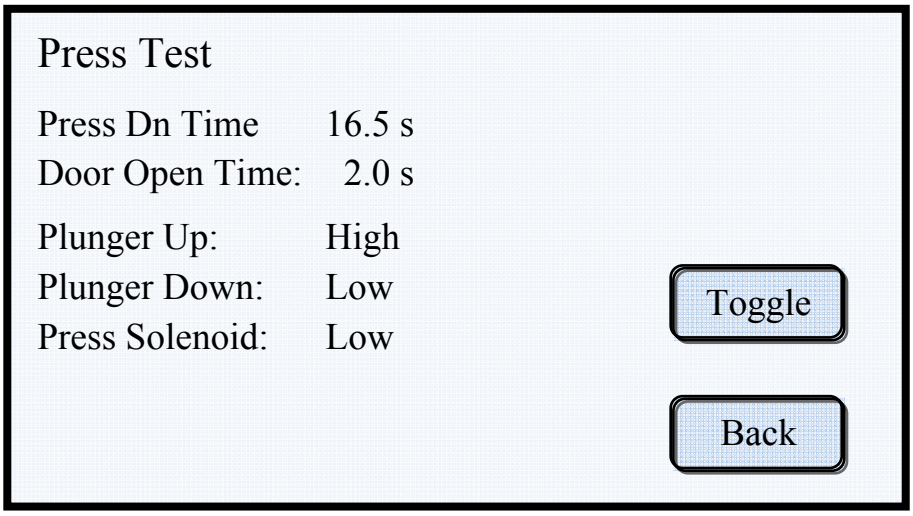
Display Example #17

This Vacuum Test utility's primary function is to calibrate the vacuum transducer. The transducer's worst case error is rated at + or – 5%, thus the ability to increase or decrease the Actual Vacuum value by +/- 5%. This calibration is performed at the factory using precision vacuum gauges and should never need adjusting.

NOTE! *The actual* Vacuum Adjust *value should be written down inside your manual should you need to change this value and restore it at a later time.*

The Vacuum Calibration utility is also a powerful tool for helping to diagnose vacuum issues with either the vacuum pump or the furnace. By running a very simple test it is easy to determine if you have a vacuum leak in the furnace or a bad vacuum pump. Enter a lower than normal vacuum level into the Test Vacuum box, for example, 650 mmHG. Touch the Start button. The platform will rise, if not already up, and once at the top the vacuum pump will start. Note that while the platform is rising the Actual Vacuum will show a value of 10 mmHG or more. This is normal and does not indicate a problem. As the vacuum rises, if the pump is strong enough it will exceed 650 mmHG by 3 mmHG and will then shut off. There will be some loss of vacuum level due to the valves closing and pressure stabilizing throughout. If it takes a minute or more before the pump restarts then the furnace is holding vacuum well enough to achieve higher vacuum levels. The problem is in the vacuum pump and needs replacing. This can be confirmed by entering a higher value in the Test Vacuum box. At some point the pump will be unable to achieve the required vacuum level.

Plunger Press Test
(Pressing Furnaces only)



Display Example # 18

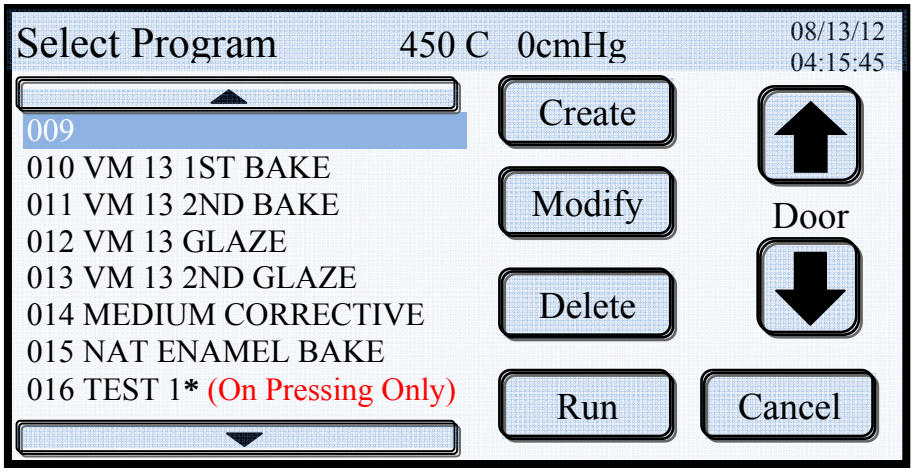
The Plunger Press Test is used to test and adjust the rate at which the plunger moves down and back up. The factory calibration has a plunger down time range of 12 to 18 seconds. The up time is factory calibrated for 1.7 to 2.3 seconds.

To verify the plunger travel times, have the furnace idling at 700°C for at least one hour. Touch the "Toggle" button. There should be a popping sound from inside the furnace as the "Press Solenoid" has been activated. It should now read High. The "Press Dn Time" is incrementing and updates approximately once a second. After a couple of seconds the "Plunger Up" status should have changed to Low. When the plunger reaches the lower sensor the "Plunger Down" status should change to High and the "Press Dn Time" will stop incrementing. As mentioned earlier, the time range should be between 12 to 18 seconds.

NOTE! *If the "*Toggle*" button has been touched and is in the middle of a downward cycle, repetitive touches of the "*Toggle*" button will have no effect. To cancel a "Press Dn Test" touch the* Back *button. You will be returned to the* Calibration Menu *screen.*

Porcelain & Pressing Programs

The Select Program Screen



Display Example #19

Touching the Porcelain button from the Main Screen brings up the Select Program Screen. This screen is the heart of a powerful and highly intuitive control center that brings total functionality to **Create, Run**, **Modify** or **Delete** programs at the touch of your finger tip.

The left side of the Select Program Screen

Located on the left half of the screen is the program list. The SUMMIT Porcelain Furnace and the Summit Press features 80 user programmable program locations. The numbers at the far left represents the program locations from 1 to 80. Eight (8) locations are displayed per page with 10 pages, thus providing 80 programs.

Easy access to the additional 9 pages is accomplished by touching the up or down arrows located at the top and bottom of the program list. The program locations, or slots, start with "001 – 008". To view program slots "009 – 016" or "071 – 080" touch the up or down arrows located at the top and bottom of the program list. With repeated touches of the up or down arrows, you can view the remaining program pages in ascending or descending order. The program pages will wrap around, meaning that if you start at the 1st program screen, programs 001 – 008 and wish to view program 075, press the up arrow to **wrap around** to the last program page, displaying programs "071 – 080". Pressing anywhere within a program line will select that program location. The selected location will be highlighted to confirm your selection. Display Example #19 shows that location 009 has been selected.

NOTE! *The Summit Press furnace allows for the creation and running of both porcelain and pressing programs. To distinguish between porcelain and pressing programs, an "*****" will follow all pressing program names as shown in Display Example #19. Program #16 is a pressing program.*

The right side of the Select Program Screen

The right half of the display holds all the controls for creating, editing and manipulating the user programs. Located at the far right are the door control buttons for raising and lowering the platform. Located immediately below the door arrows is the **Cancel** button. Touching this button will bring you back to the MAIN SCREEN.

Note! *Touching a* Cancel *or* OK *button on any screen will bring you back to the previous screen. The* OK *button may update or save any applicable changes whereas the* Cancel *button will not.*

Create

Create new programs by touching this button. You can create a program only in an empty memory location. A memory location is considered empty if the area to the right of the program number is blank. In Example Display #19, the only empty memory location is slot #009. All other memory locations have a name to the right of the program number and are, therefore, not empty.
For example, in Example Display #19, if you select program # 12 and then touch the CREATE button, an error message will be displayed. You must then press the OK button to clear the alarm. You must either Delete or Move the program from slot #12 before you can create a new program there.

NOTE! *For pressing furnaces, you will be prompted to choose whether you are creating a porcelain program or a pressing program.*

NOTE! *The operating system does not check for duplicate program names. Therefore, different memory locations can have the same program name.*

Modify

This button is used to bring up the Edit screen where all editing functions to an existing program can be performed.

NOTE! *A program must be created and saved prior to its being edited.*

Delete

This button is used to delete an existing program. Deleting a program will make its memory location blank again. A new program can now be created in this memory location. There is no way to recover a deleted program unless it was saved to a memory stick where it can be imported along with all the other programs on the memory stick.

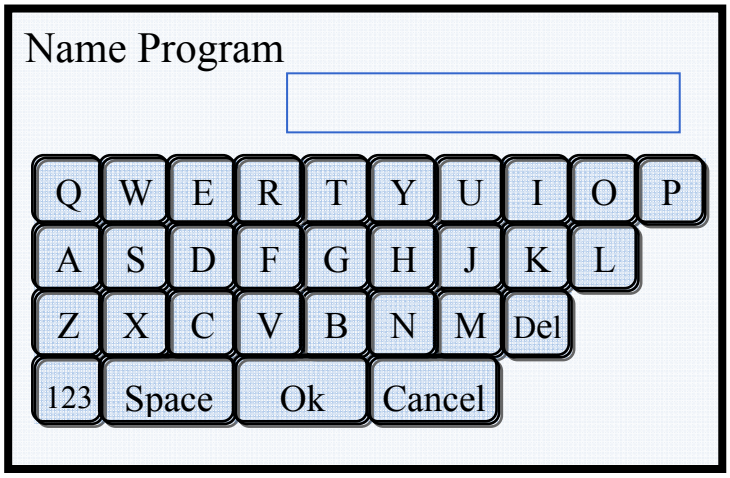
Run

This button starts the selected user program.

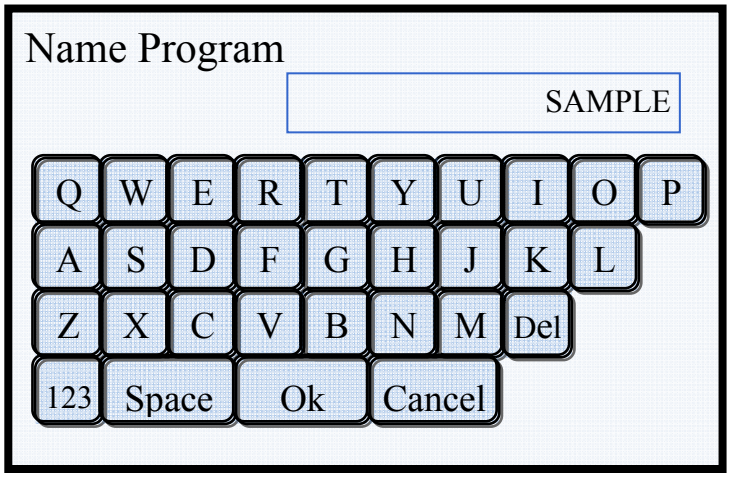
NOTE! *The platform must be fully lowered prior to running a program. If the platform is not fully lowered and the* "RUN" *button is touched, an alarm will sound, the platform will start to lower and a warning message, "**Wait until door opens then press** RUN" will be displayed. You must touch the* OK *button to silence the alarm and clear the warning message. Once the door has reached the lower limit and stops, the* RUN *button can again be touched.*

Create a New Porcelain Program

Entering a Program Name



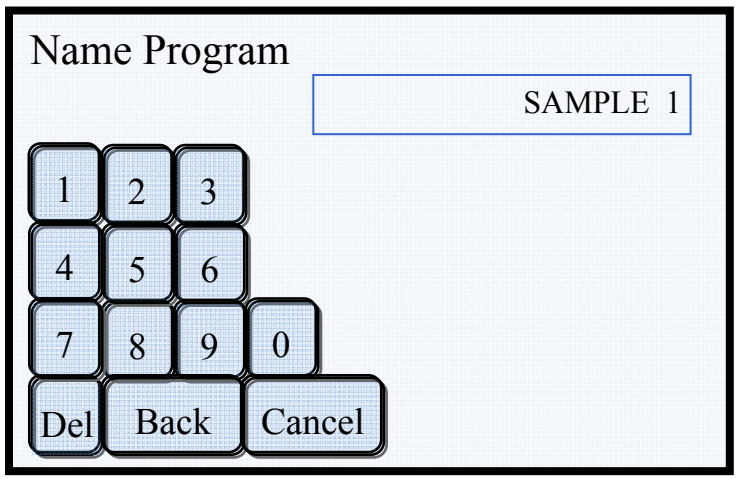
Display Example #20



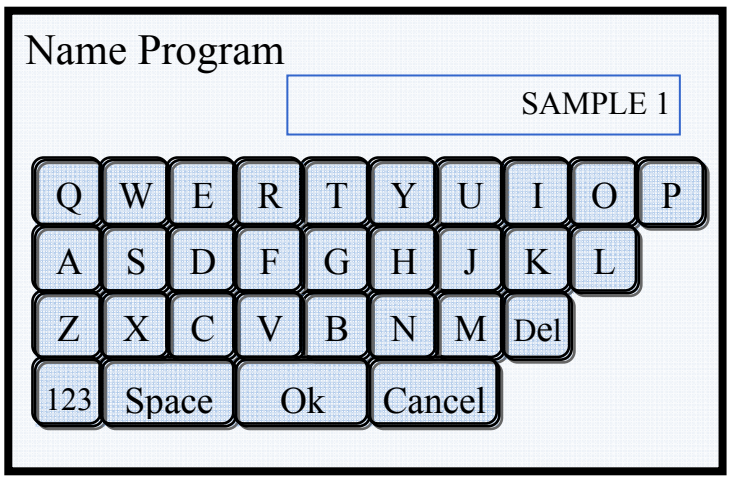
Display Example #21

After touching the empty memory location #009 in Example Display #19, touch the **CREATE** button.

NOTE! *If using a Summit Press, the next screen will ask* "Porcelain or Pressing?" *Touch* Porcelain. *Example Display #20 will be displayed on the screen. At this screen you will enter the program name.*



Example Display #22



Display Example #23

Any combination of letters, spaces and numbers may be used up to 15 characters per name. To enter numbers, touch the 123 button and the number keypad will be displayed. See Display Example #22. Enter the number(s) and touch the **Back** button to bring you to the Program Name Screen.

Touching the OK button will bring up Program Data Entry Screen.

Porcelain Program Parameters

Low Temp (° C or F) – The starting or entry temperature of the porcelain.
350°C min - 850°C max

Preheat (minutes:seconds) - The time required to bring the porcelain into the muffle chamber.
00:20sec min – 99min:59 sec max

Heat Rate (°C or F / min) - The rate of change (delta) in temperature per minute.
2°C/minute min - 150°C/minute max.

Vac Level (cmHG or inHG) - The level of vacuum required for the program.
5 cmHG (15 inHG) min – 75 cmHG (29 inHG) max.

NOTE! *When entering a 76 cmHG (30 inHG), the pump will run continuously.*

High Temp (°C or F) - The high temperature required by the porcelain.
500°C min - 1195°C Max.

Vac Hold (minutes:seconds) - The time in minutes and seconds that the porcelain is required to stay at High Temp while under vacuum. 00min:00sec min – 99min:59sec max.

NOTE! *When using Vac Hold the value for Vac Release **must** be zero (0).*

Hold Time (minutes:seconds) - The time in minutes and seconds that the porcelain is required to stay at High Temp without vacuum. 00min:00sec min – 99min:59sec max.

NOTE! *The Vac Hold and Hold Time are consecutive timers. For example, if Vac Hold is programmed for 30 seconds and Hold Time is programmed for 1 minute and 30 seconds. There is a total of 2 minutes that High Temp will be maintained. Once High Temp has been reached, the Vac Hold timer of 30 seconds starts with vacuum. After 30 seconds the vacuum is released and the Hold Time timer of 1 minute and 30 seconds starts. After 1 minute and 30 seconds the program proceeds to the next program step.*

2nd Hold Temp (°C or F)- The temperature that the porcelain needs to cool down to when layered over a zirconia or titanium core. 1° C below High Temp to 500° C.

NOTE! *This parameter allows for the proper recrystallization of layered materials with widely different thermal coefficients of expansion and conduction. The program lowers the High Temp to the 2nd Hold Temp in a controlled 15° C/min rate.*

2nd Hold Time (minutes:seconds) - The time the 2nd Hold Temp will be maintained after the 2nd Hold Temp has been reached. 00min:00sec min – 99min:59sec max.

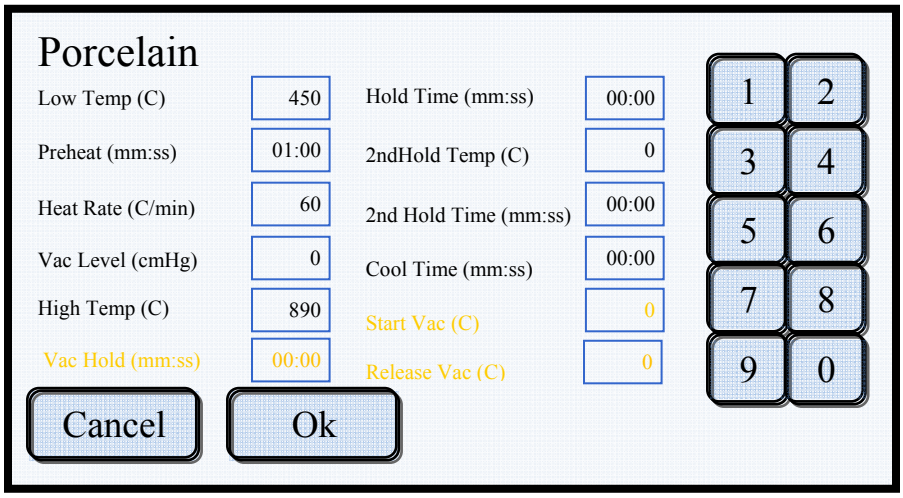
Cool Time (minutes:seconds) - The time to completely lower the porcelain from the muffle chamber.
00min:00sec min – 99min:59sec max.

Start Vac (°C or F)- The temperature that the vacuum pump will start at. **This value must be equal to or greater than the Low Temp value and less than the High Temp value.**

Release Vac (°C or F) - The temperature that the vacuum will be released. **This value must be equal To or less then the High Temp value and greater than the Low Temp value.**

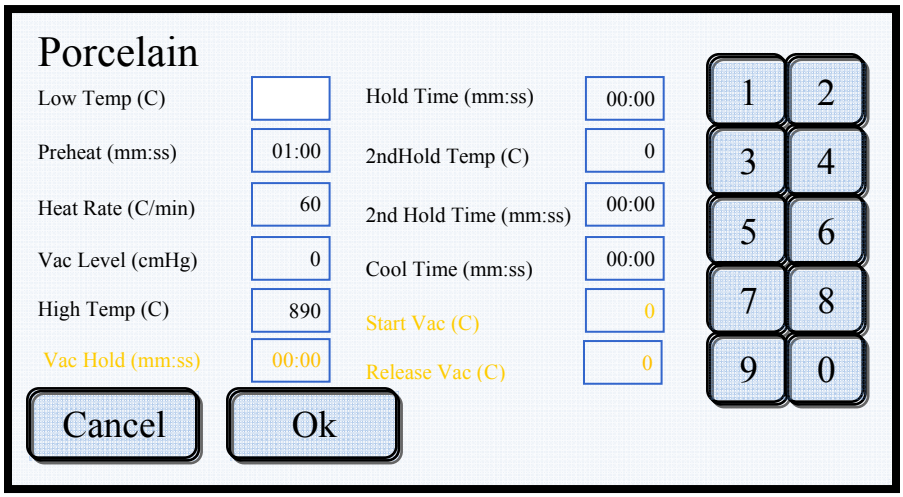
NOTE! *When using Vac Hold the value for Vac Release **must** be zero (0).*

Porcelain Data Entry Screen



Display Example #24

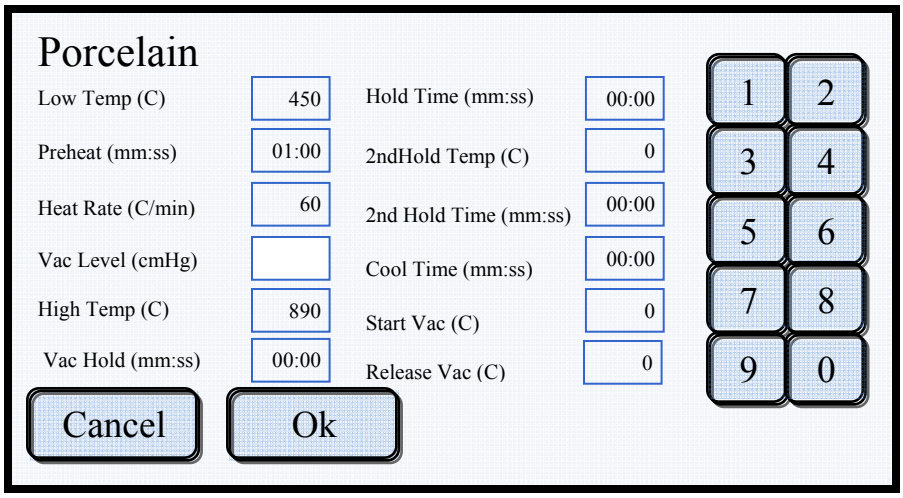
Display Example #24 is the default porcelain parameters screen for creating a new program. From here you touch the specific program parameter box and enter the value from the number panel at the right side of the screen. Each time you touch a parameter box it will highlight and clear to verify the correct box has been touched. If a box has been touched accidentally, the original data will remain in memory. Just touch the correct box and the original data in the first box will reappear.



Display Example #25

To select a parameter to be changed, touch the appropriate box. It will clear the current data and highlight the box. In Display Example #25, the Low Temp box has been touched and has been highlighted. A new value can now be entered. **There is no Enter key to be touched after data has been entered.** Simply touch the next box to be programmed and continue entering data until all appropriate values have been entered. There is no specific order for entering program parameters. They can be entered in any order. If an incorrect value has been entered, simply retouch the box. The box will clear, and the correct value can be entered.

A special consideration has been made with regard to the vacuum parameters. A default value of zero (0) is programmed for all new programs. When the value of the vacuum is zero, all parameters regarding vacuum are lighted out in yellow and are not used, (see Display Example #25). When the vacuum box is touched, the vacuum boxes will appear and can be programmed.

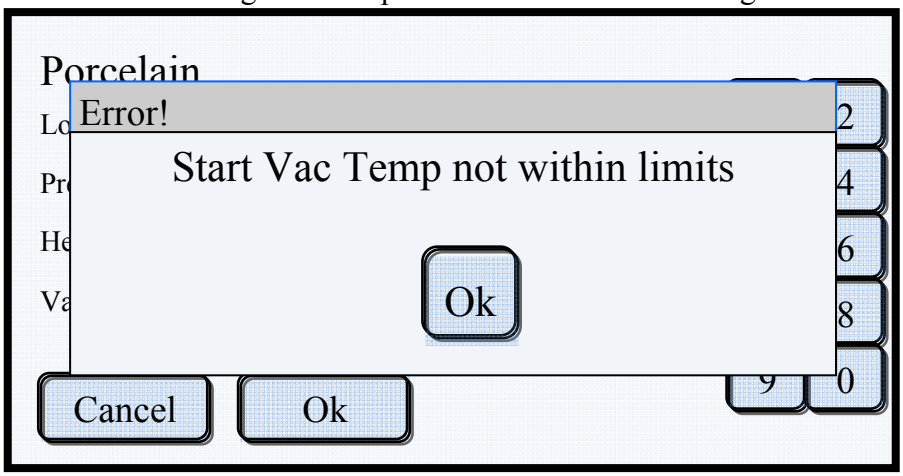


Display Example #26

The vacuum level entered can be any value between 15 – 76 cm (5 – 30in). A value entered outside this range of values will produce an error message. If 76 cm (30in) is entered, the program will run the vacuum pump continuously regardless of the actual vacuum level as long as a minimum level of 73cm (28.5) is obtained for minimum vacuum requirements. The **Start Vac** can be any value equal to or greater than the **Low Temp** value and must be lower than the **High Temp** value. The **Release Vac** value must be greater than the **Start Vac** value and less than or equal to the **High Temp**.

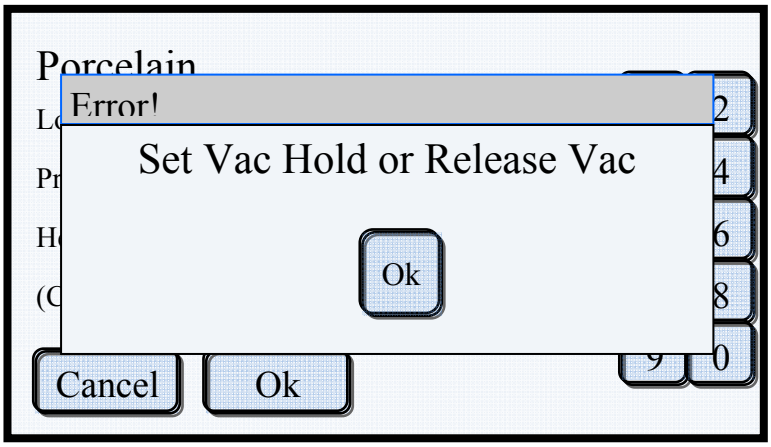
NOTE! *When using a* Vac Hold *time other than (0), the* Release Vac *must be set to zero (0) as the* Vac Hold *timer starts once* High Temp *has been reached. If* Vac Hold *time is not required then this value must be (0) and a* Release Vac *temperature must be entered. If both non-zero parameters are entered then an error message will be displayed.*

The following are examples of Vacuum error messages:

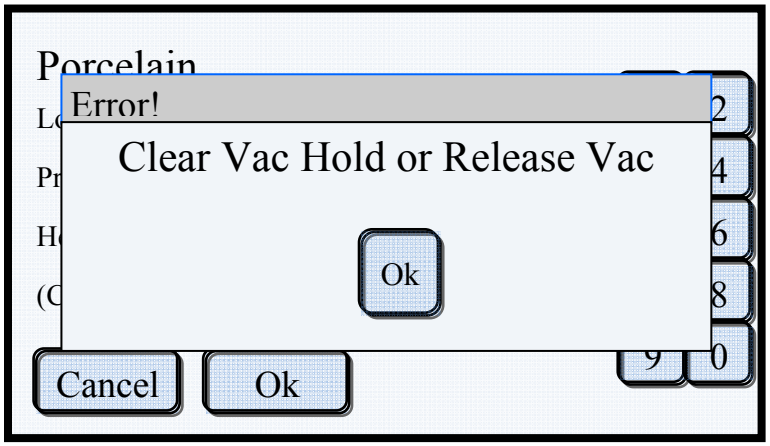


Display Example #27

The above error occurs when the Start Vac temperature entered is not equal to or greater than the Low Temp temperature entered.



Display Example #28

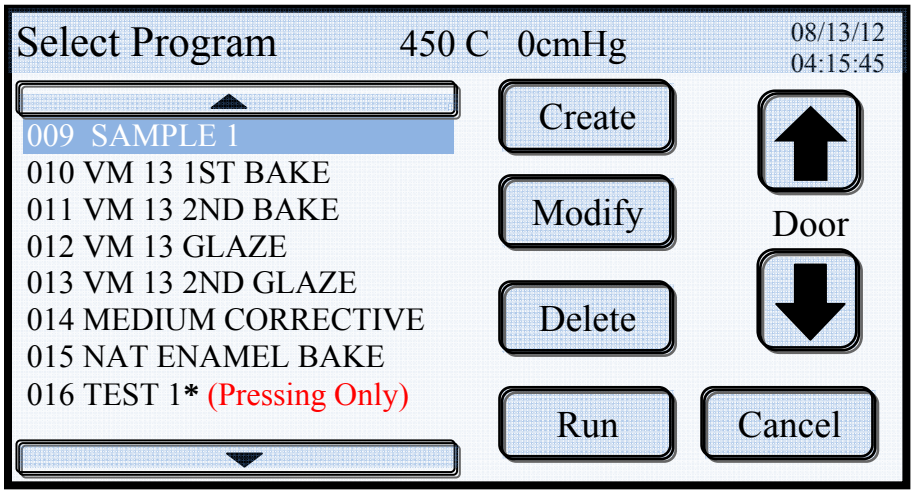


Display Example #29

The "**Set Vac Hold or Release Vac**" error occurs when both the Vac Hold and Release Vac values are (0). A valid value for one or the other (**but not both**) must be entered.
The "**Clear Vac Hold or Release Vac**" error occurs when values for both Vac Hold and Release Vac have been entered. A valid value for one or the other (**but not both**) must be entered.

When all the parameters have been entered and the program is ready for saving, touch the **Ok** button. By touching the **Ok** button, all entries are saved to the permanent memory and the display returns to the Select Program Screen, (Display Example #30). Notice that program slot 009 is now filled with the new program name SAMPLE 1. The new program can now be run by touching the **Run** button.

NOTE! *By touching the* Cancel *button at any time during the programming, all entries will be erased and you will be returned to the* Select Program *screen, (Display Example #19). Notice that program slot 009 will still be blank.*



Display Example #30

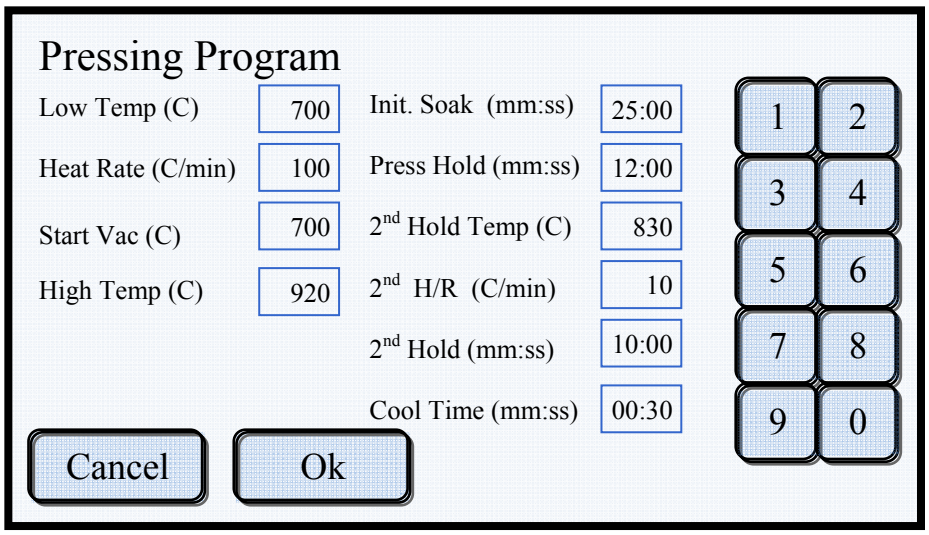
An Additional Note on Programming Vacuum

Many furnaces do not allow for the programming of a specific vacuum level, but instead provide for a "YES / NO" or a percentage of vacuum entry, typically 90% to 100%. The Summit furnaces allow for a more precise vacuum control. A simple rule for entering programs that do not state a specific vacuum level in cm or inches is to enter 72 – 73 cm (28 inches). Higher vacuum levels of 74 - 75 cm (29inches) can be programmed in; however, most vacuum pumps will have difficulty achieving these levels.

Create a New Pressing Program

NOTE! *This section assumes that the reader has read and understands the name and data entry via the touch screen as described in the* "Create a New Porcelain Program" *section. If not, please refer to the previous chapter for detailed instructions on how to create a new program.*

After selecting to create a pressing program, naming the pressing program follows the same steps as naming a porcelain program. Please refer to **Creating a New Program** Porcelain Section, Display Examples #20 - #23 for naming a pressing program. With the program name entered, the pressing parameters screen should be up and ready to enter your program data. Refer to Display Example #31.



Display Example #31

Low Temp – The entry temperature for the program. 700°C (1292°F) is typical Low Temp value.

Heat Rate – The number of degrees per minute the temperature will increase

Start Vac – This function has two modes of operation:

1. Traditional Vacuum Mode – place any temperature equal to or greater than Low Temp and less than or equal to High Temp. That is the temperature that the vacuum pump will come on. Vacuum will be maintained for the remainder of the cycle
2. Minimum Vacuum Mode – place a zero (0) or any value less than the Low Temp value and vacuum will come on prior to the Press Hold Stage.

High Temp – The maximum temperature that the program will run

Init. Soak – The time in minutes and seconds that the ring will soak prior to pressing.

Press Hold – The time in minutes and seconds that the pressing piston is engaged to the ring

2nd Hold Temp – The temperature that the furnace will lower to after completion of the Press Hold stage. This stage does not use pressing or vacuum.

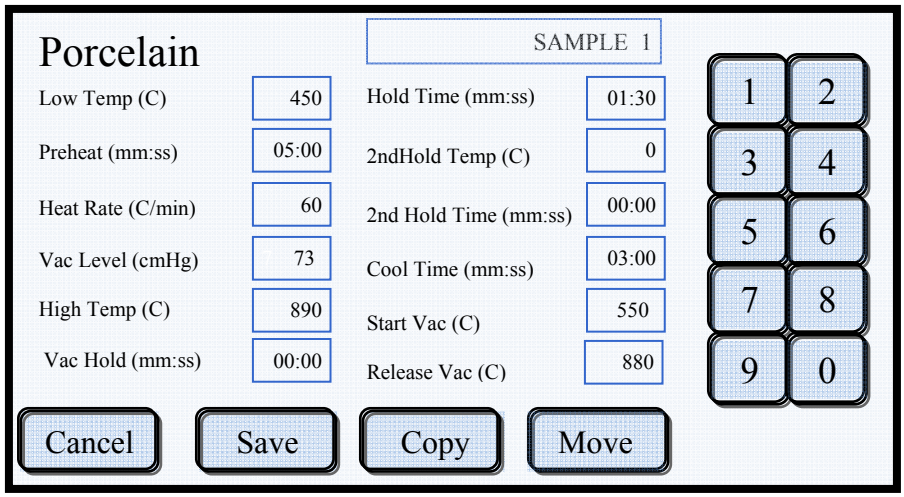
NOTE! *The purpose of this stage is to provide controlled cooling to eliminate or greatly minimize substrate stress.* ***Place a zero (0) in this box to disable this feature.***

2nd H/R – The rate at which the temperature will drop from High Temp to the 2nd Hold Temp

2nd Hold – The time in minutes and seconds that the 2nd Hold Temp will be held for

Cool Time – The time in minutes and seconds that it takes for the door to come down

Modify an Existing Program
Porcelain or Pressing



Display Example #32

Once a program has been created and saved, it is possible for you to modify or edit the program. From the **Select Program Screen**, select the program to be modified. After selecting the program to be modified, touch the Modify button. A screen similar to Display Example #32 will appear. It looks almost identical to the Create Program screen. From here you can make all the changes needed to the program, including its name and location. You can also make copies of the original program that you wish to save in different memory locations.

Modifying or Editing a Program

Editing a program is very simple. Make all the changes that you need to as if creating a new program. When you are finished, touch the **Save** button. All changes will be recorded to memory and the Select Program screen will appear indicating that the edit process has been completed.

NOTE! *Touch the* Save *button only after all the changes have been made.*

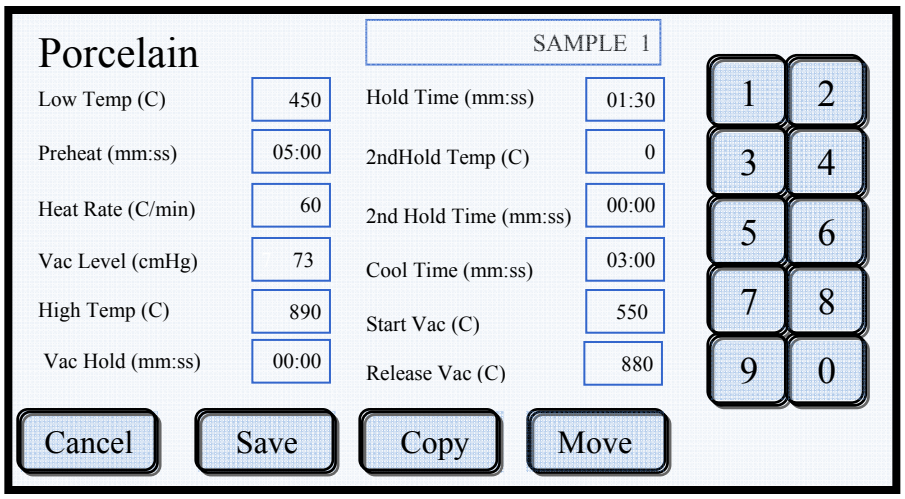
Should you decide not to save your changes made during the edit process, touch the Cancel button. No changes will be recorded to memory, and the program will retain all its original values. The Select Program screen will appear indicating that the edit process has been cancelled.

Copying a Program

There are 2 methods for copying a program:

Method 1

Select program Sample 1 from the Select Program screen and touch the Modify button. A screen similar to Display Example #33 will be displayed. In the Modify Program screen, touch the Copy button. The next screen displayed will be the Name Program screen. Enter the new name of the program to be copied in the same manner as you used to enter in Sample 1 earlier in the manual. Name this program Sample 2. When completed, touch the OK button. The next screen will look very similar to the Select Program screen. Select the program location number where you would like the program to be copied to. If necessary, use the Page Up or Page Down arrows to bring up the desired program page. Touch the appropriate program location box and the copied program will be completed. The Select Program screen will appear with this copied program selected. The copied program can now be run or modified as necessary.



Display Example #33

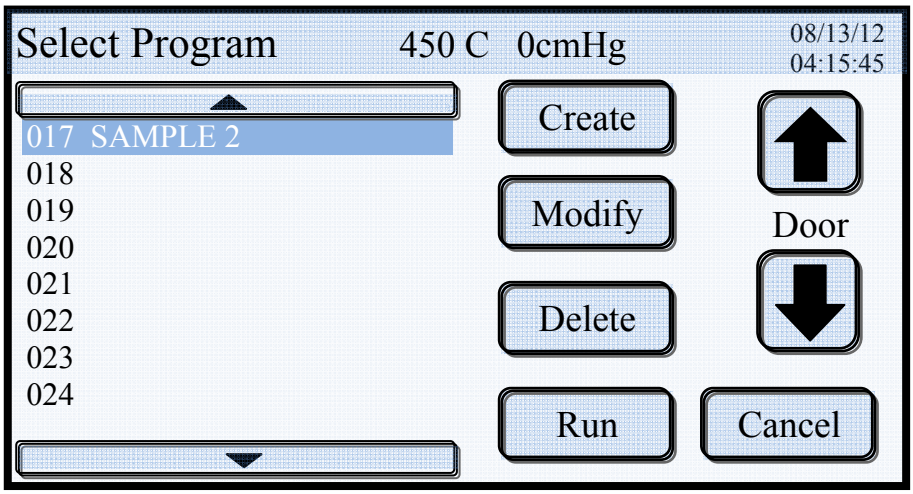
Method 2

Select program Sample 1 from the Select Program screen and touch the Modify button. Once in the Modify Program screen, **do not** touch the Copy button as in Method 1. Make all necessary changes that will be required to the copied program first. For example, program Sample 1, created earlier in the manual, has a Pre Heat of 5 minutes and a High Temp of 890° C. The copied program will require a Pre Heat of only 1 minute and a High Temp of 840°C. Again, make all the changes first. **Do not** modify the program name to Sample 2 at this time.

After making all the required changes to the program, touch the copy button. The next screen displayed will be the Name Program screen. Enter the new name of the program to be copied. In the above example, use Sample 2. When completed, touch the OK button. The next screen will look very similar to the Select Program screen. Select the program location number where you would like the modified

program to be copied to. If necessary, use the Page Up or Page Down arrows to bring up the desired program page. Touch the appropriate program location box, and the copied program will be completed. The Select Program screen will appear with this copied program selected. The copied program, Sample 2, has been saved at the new location with all the modifications and can now be run.

NOTE! *The original program, Sample 1, will be as it was originally. None of the changes that were made will be saved to Sample 1, only to the copied Sample 2 program.*



Display Example #34

Move a Program

To move a program from one program slot to another, touch the Modify button and then press the Move button. The display will now show the Program Select screen. From here, simply touch the program slot you would like to move the program to. The Program Select screen will now update to show that the program has been moved and the process is complete.

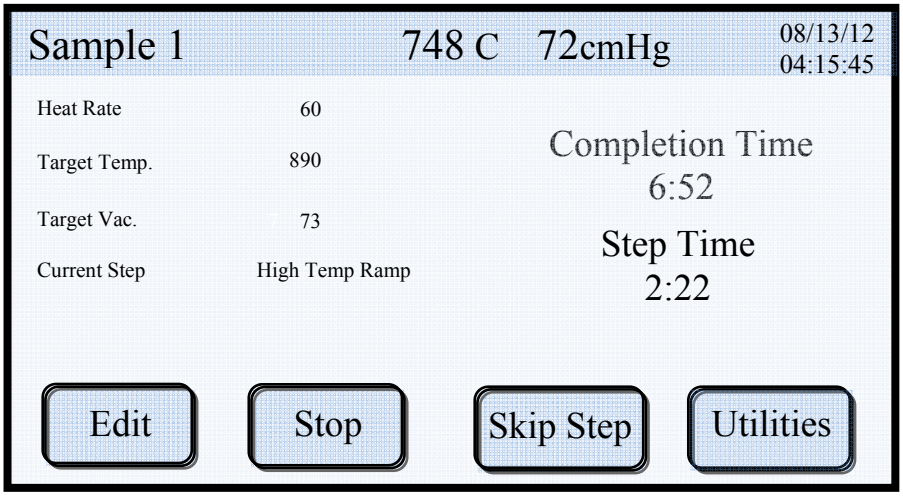
Delete a Program

To delete a program, touch the appropriate program slot to highlight it. Touch the Delete button. A box will open to confirm that the program is to be deleted. Touching “Yes” will delete the program. The Program Select screen will reappear with the selected program slot vacant. If “No” is selected, the Delete process will be cancelled and the Program Select screen will return unchanged.

Run a Program

Once a program as been created and saved it is ready to run. From the Program Select screen, touch and highlight the program to be run. Touch the Run button. The display will change to the Run Program screen and the program will commence.

NOTE! *If the lift platform has not been fully lowered prior to touching the "Run" button, the error message* "Wait until Door opens then press RUN" *will be displayed and an alarm will sound. The lift platform will then start to lower automatically. Touch the* OK *button to silence the alarm and clear the error screen. Once the lift platform is completely lowered the* Run *button can be touched to start the program.*



Display Example #35

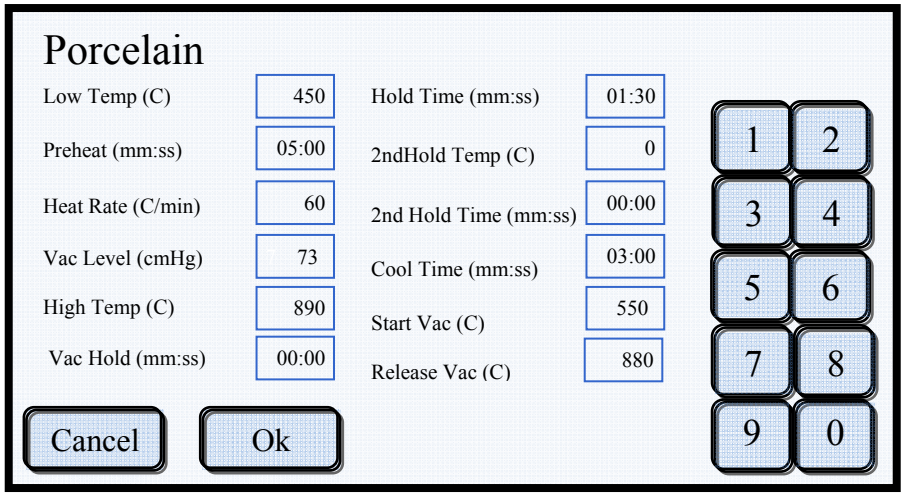
Display Example #35 shows the Program Run Screen. It provides critical information regarding the running status of the program. Starting at the top, upper left corner, there is the name of the program being run followed by the current temperature and vacuum level. The upper right corner shows the date and time.

In the middle section of the screen, the far left column shows the program's key parameters: Heat Rate, Target Temp., Target Vac. and the current step of the program being run. The next column shows the programmed values. The Heat Rate is 60°C /min, the target temperature of the current step is 890°C and the target vacuum level is 73 cmHG. The current step is "High Temp Ramp", meaning the program is ramping up to the programmed high temp of 890°C. The right column shows two time counters. The upper counter named "Completion Time" refers to overall time to program completion. The counter shows that there is 6 minutes and 52 seconds until the program is completed. The lower counter named "Step Time" refers to the time required to complete the current step. The counter shows that there is 2 minutes and 22 seconds of the "High Temp Ramp" to reach a high temp of 890°C. Once this timer has counted down to 0 minutes and 00 seconds, the temperature of 890°C will have been reached. The next step, "Hold Time" will commence, the "Current Step will change to "Hold Time" and the "Step Time" counter will show 1:30 and start counting down to zero.

Edit

Touching the “Edit” button brings up full-function “On the Fly” edit screen. See display Example #36 below. Any parameter can be changed while the program is running. All rules and limits for creating and modifying a program apply to editing a program while it is running.

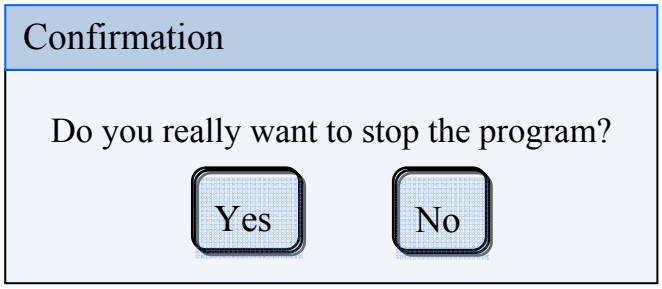
NOTE! *All edited values are valid for that cycle only. When the program ends, the original parameter values will be restored.*



Display Example #36

Stop

To Stop or cancel a running program, touch the Stop button. This will bring up a confirmation box shown below. To continue and stop the program, touch “Yes”. If the Stop button was touched by accident or you prefer to continue with running the program, touch the “No” button. See example #37 below.



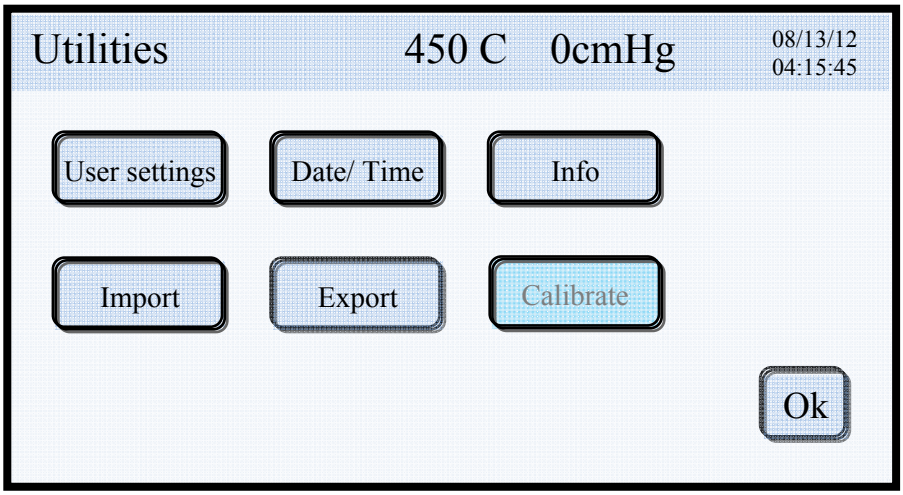
Display Example #37

Skip Step

Skip Step is a powerful tool that allows the user to move or Skip ahead one or more steps from the current step in a program.

NOTE! *When starting a program, the processor runs several system checks before actually starting the program. Upon completion of these tests an audible clicking of the vacuum vent valve closing will be heard. Any attempts to Skip a step prior to this will be ignored. You can only skip forward. There is no going back once a step has been skipped.*

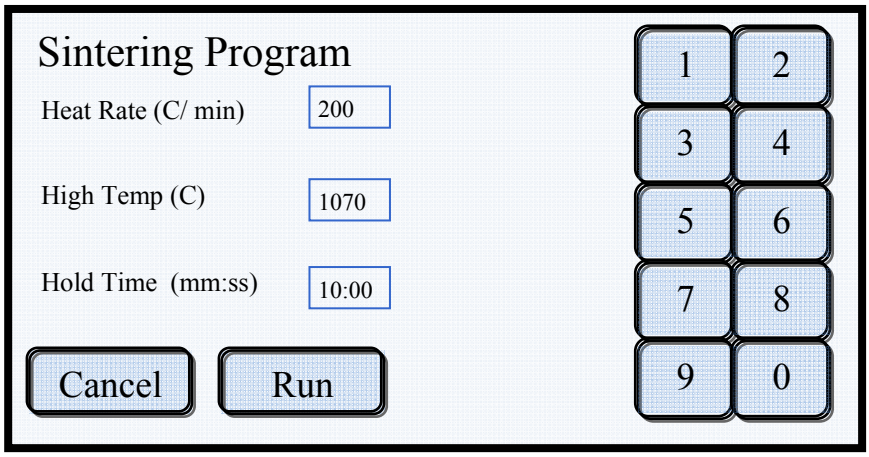
Utilities



Display Example #38

Touching the Utilities button while running a program allows the user to access the Utilities menu as shown above in Display Example #38. All Utilities features with the exception of Calibrate and Set User Defaults are available. See the Utilities section starting on page 13.

Metal Sintering



Display Example #39

This special purpose screen is to facilitate the sintering of metal, (NOT Zirconia). This screen eliminates the need for using up a program memory location for this limited function.

Programming is simple.

1. Enter the desired heat rate, (540° F, 300° C max) and the sintering temperature, (2192° F, 1200° C Max).

2. Enter hold time in minutes and seconds.

3. Touch the **Run** button to start your program.

Remember that we are here to help you if you should have any difficulties with programming. You may call us for tech support at 1-877-380-4242 or email us at techsupport@ibexdental.com.

Error Codes

The following is a listing of all the error codes by category.

Programming Errors

"Low Temp not within limits"
"Preheat Time not within limits"
"Heat Rate not within limits"
"Vacuum Level not within limits"
"High Temp not within limits"
"Vac Hold Time not within limits"
"Hold Time not within limits"
"Start Vac Temp not within limits"
"Set only Vac Hold or Release Vac"
"Clear Vac Hold or Release Vac"
"Release Vac not within limits"
"Cool Time not within limits"

Press Programming Errors

"Initial Soak Time not within limits"
"Press Hold not within limits"
"2nd Hold Temp not within limits"
"2nd Hold Time not within limits"
"2nd Heat Rate not within limits"

Set Up Errors

"Idling time out of range"
"Power Save temp out of range"
"Invalid Month specified!"
"Invalid Feb day for leap year!”
"Invalid Feb day!"
"Max day for month is 30!"
"Invalid Day specified!"
"Invalid hour for PM"
"Must be in the range of -5% to +5%"

Operational Errors

"Wait until door opens and press Run."
"Pressing not enabled!"
"Run-time error!"
"Could not achieve minimum vacuum level!"
"Could not reach vacuum!"
"Unable to hold vacuum!"

Pressing Operational Errors

"ROD LIMIT SWITCH FAILURE, Press Disabled" // Both limit switches are ON
"ROD NOT EXTENDED, Check Pressure"
"ROD FULLY EXTENDED, Check Ring"
"ROD FAILED TO RETRACT, Press Disabled"

System Errors

"Door Failure: Motor Alert!"
"Door Failure!: NO LIMIT IN STOP" // Door is stopped but cannot detect limit switch
"Door Failure!: NO LIMIT IN MOTION" // Door is in motion but has not detect limit switch
"Door Failure!: BOTH LIMITS" // Both limit switches are ON simultaneously
"Open Thermocouple!"
"Oven Overtemp!"
"Heater Runaway!"
"Heater Failure!"
"TEST: Could not achieve vacuum level!”
"Corrupt data may exist!"
"Could not write program!"
"Could not write user settings!"
"Could not write export file!"